CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2021

DateRun: 11/21/2021

Experimenters: Nicole Kebler

ClientType: Metal Working

ProjectNumber: Project #1

Substrates: Carbon Steel

PartType: Coupon

Contaminants: Oil

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric, Visual

Purpose: To evaluate cleaners at 120 F for the removal of oil from stainless steel substrate.

Experimental Procedure: The cleaners were put into beakers and heated to 120 F in the ultrasonics tank. The coupons were weighed for dirty weights and once the cleaners were at the correct temperatures, the coupons were put into the beakers. The ultrasonics tank was turned on and ran for 15 minutes. The coupons were taken out and left to dry fully. Once dry, the clean weights were taken. The coupons were cleaned again till all remaining oil was removed from the coupons and the initial weights were taken. The ultrasonics tank was run at 40 KHz.

Results: Crystal Simple Green was tested at concentrations 1:15 and 1:20. The 1:15 concentration removed about 73%, but visually looked cleaner than the 1:20 with less dark spots on the coupon. The 1:20 concentration removed about 78% of the oil. SC Aircraft removed about 66% and was the lowest percentage removal. Mirachem 500 removed about 92% of the oil and Alconox removed about 86% of the oil. The Mirachem and Alconox coupons still had some dark spotting on the surface.

Cleaner	Initial wt. of cont.	Final wt. of cont.	Average
Simple Green 1:15	0.2473	0.0664	73.15
Simple Green 1:20	0.3082	0.0686	77.74
SC Aircraft 1:3	0.2731	0.0926	66.09
Mirachem 500 2:1	0.3038	0.0224	92.63
Alconox 2%	0.2865	0.0405	85.86

Summary:

Substrates:	Carbon Steel
Contaminants:	Oil

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Simple Green	Crystal Simple Green Industrial Cleaner & Degreaser	1:15	73.00	☐	Crystal Simple Green at 1:15 was not effective at removing oil from stainless steel.
Simple Green	Crystal Simple Green Industrial Cleaner & Degreaser	1:20	78.00	☐	Crystal Simple Green at 1:20 concentration was not effective at removing oil from stainless steel.
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	1:3	66.00	☐	SC Aircraft was not effective at removing oil from stainless steel.
Mirachem Corporation	Mirachem 500	2:1	93.00	☑	Mirachem 500 was effective for the removal of oil from stainless steel.
Alconox Inc	Alconox	2%	86.00	☐	Alconox was not effective for the removal of oil from stainless steel.

Conclusion: Visually Simple Green 1:15 looked the cleanest, while Mirachem 500 had the highest percentage removal. Next steps are to continue testing with the 1:15 concentration of Crystal Simple Green at a higher temperature and to test with Mirachem and Alconox.